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**Expedited Proceeding under 37 C.F.R. § 1.116**

Examining Group 1731

**PATENT APPLICATION**

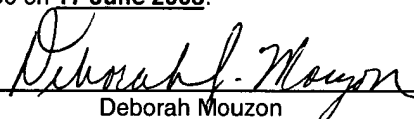
Attorney Docket No. 1920

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

**APPLICANTS:** MERRETTE, Michele M. *et al.*  
**SERIAL NO.:** 09/804 791      **GROUP ART UNIT:** 1731  
**FILED:** 13 March 2001      **EXAMINER:** CHIN, Peter  
**ENTITLED:** STARCHES FOR USE IN PAPERMAKING

**CERTIFICATE of MAILING UNDER 37 C.F.R. § 1.8**

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Mail Stop AF, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on **17 June 2003**.

  
Deborah Mouzon

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**DECLARATION PURSUANT TO 37 C.F.R. § 1.132**

Dear Sir:

I, John J. Tsai, residing at 74 Woodview Drive, Belle Mead, New Jersey 08502 USA, hereby declare:


1. I am a graduate of Ohio State University, Columbus, Ohio, where I was awarded a Doctorate of Philosophy in Organic Chemistry in 1975.

2. I am employed by National Starch and Chemical Company, the assignee of the above-captioned application. I have been employed by National Starch since 1978 and currently am a Research Associate. My experience at National Starch and Chemical Company has included significant involvement in starch chemistry, particularly in modified starches for use in papermaking.
3. I am a co-inventor of the above-captioned application.
4. I performed experiments in accordance with the prosecution of this application. These experiments were made to demonstrate that starches modified with the claimed amount of crosslinking agent in accordance to the presently claimed invention do not have a gel point temperature range greater than the unmodified starch as taught in International Publication No. WO 97/46591 issued to Neale, *et al.* ("Neale").
5. Gelatinization temperatures were determined for three different types of starches, all having a waxy base – (1) a degraded waxy; (2) a degraded, crosslinked and cationized waxy; and (3) a nondegraded, crosslinked and cationized waxy. Both starch 2 and starch 3 were crosslinked within the claimed limit of the present invention (about 0.001% to about 0.05% by weight of dry starch), with starch 3 at the upper limit of the claimed range.
6. Gelatinization temperature for each of the starches was determined measured using a Micro Visco-Amylo-Graph<sup>®</sup> (available from C. W. Brabender<sup>®</sup> Instruments, Inc., South Hackensack, New Jersey). 11.0 g anhydrous starch was slurried in 99.0 g distilled water and then added to the Brabender viscoamylograph bowl. The starch slurry was rapidly heated to 40°C and then heated further from 40° to 95°C at a heating rate of 1.5°C per minute. The temperatures were recorded when the viscosity reached 100 Brabender Units and at maximum viscosity.
7. The results shown in Table 1 below illustrate that both the cationized crosslinked starch 3, most similar to that exemplified in Neale (with the exception of substantially less crosslinking), and the degraded, cationized crosslinked starch (as claimed in the present invention) have a gelatinization temperature that is lower than that of the degraded (unmodified) starch (1).

8. Accordingly and in conclusion, the results show starch modified with an amount of inhibition agent or crosslinker with the claimed range of the present invention will not have a gel point higher than that of the unmodified starch.

I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by a fine or imprisonment or both under 1001 of Title 18 of the United States Code and such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

  
John J. Tsai

  
Date

**Table 1**

Sample Waxy	Amount of Crosslinker	Gel Temp (°C)
Starch 1	None (unmodified or “premodified”)	67.2
Starch 2	300 ppm (0.03% by weight of dry starch)	52.6
Starch 3	500 ppm (0.03% by weight of dry starch)	55.4